British S. S. *Wayfarer:* Gale began on the 14th. Lowest barometer, 29.89 inches at 8 a. m. on the 15th; position, latitude 43° 45′ N., longitude 33° 40′ W. End of gale on the 15th. Highest force of wind 9, SSW.; steady from SSW.

British S. S. *Bolivian:* Gale began on the 15th. Lowest barometer, 29.40 inches at noon on the 15th; position, latitude 40° 29′ N., longitude 59° 35′ W. End on the 17th. Highest force of wind 11, NW.; shifts W.–N.

British S. S. *Celtic:* Gale began on the 15th. Lowest barometer, 28.78 inches on the 15th; position, latitude 41° 03′ N., longitude 55° 56′ W. End on the 16th. Highest force of wind 11, WNW.; shifts SSW.–NW.–N.

American S. S. *East Cape:* Gale began on the 16th. Lowest barometer, 29.17 inches at 6 p. m. on the 16th; position, latitude 49° 10′ N., longitude 38° 30′ W. End on the 17th. Highest force of wind 10, S.; shifts SSW.–SE.–E.–SSW.

From the 18th to the 20th moderate weather prevailed over practically the entire ocean, with the average pressure considerably above the normal.

On the 21st a well-developed LOW was central near Sable Island, Nova Scotia, and strong southerly gales prevailed in the easterly quadrants, while northerly winds of gale force were encountered between the 60th meridian and the American coast.

From the 22d to the 24th heavy weather was reported from the western section of the ocean, between the 30th and 40th parallels, and the 50th and 67th meridians.

From the 21st to the 24th gales were also encountered by vessels in the eastern division of the steamer lanes, although not enough reports have been received from these waters to permit of an accurate determination of the centers and extent of these disturbances.

Storm logs:

British S. S. *Ninian:* Gale began on the 21st. Lowest barometer, 29.70 inches at 6 a. m. on the 21st; position, latitude 42° 19′ N., longitude 62° 58′ W. End of gale on the 21st. Highest force of wind 9; shifts W.–N. by E.

American S. S. *Jackson:* Gale began on the 21st. Lowest barometer, 29.12 inches at 4 a. m. on the 21st; position, latitude 58° 45′ N., longitude 12° W. End on the 24th. Highest force of wind 10. Shifts not given.

American S. S. *Osawatomie:* Gale began on the 21st. Lowest barometer, 29.45 inches at 2 a. m. on the 22d; position, latitude 43° 49′ N., longitude 41° 25′ W. End on the 23d. Highest force of wind 9, WNW.; shifts SSW.–W.–NW.–N.

American S. S. *Ipswich:* Gale began on the 22d. Lowest barometer, 29.32 inches at 11 p. m. on the 22d; position, latitude 35° 41′ N., longitude 61° 18′ W. End on the 23d. Highest force of wind 9; shifts SW.–W.–WNW.

American S. S. *Bellingham:* Gale began on the 22d. Lowest barometer, 29.54 inches at 11 p. m. on the 22d; position, latitude 35° 44′ N., longitude 60° W. End on the 23d. Highest force of wind 12, W.; shifts SSW.–NW.

From the 25th to the 28th, while moderate gales were reported by a few vessels in widely scattered localities, moderate weather with high pressure and slight gradients prevailed over the ocean as a whole.

NORTH PACIFIC OCEAN.

By F. G. TINGLEY.

At Midway Island pressure was above the normal by moderate amounts on the 2d, 9th, 10th, 12th, 15th, and 28th. On other days it was below normal, markedly so from the 18th to 26th, for which period the daily deficiency averaged some 0.33 inch.

At Honolulu the pressure curve closely followed that of Midway Island, but the departures were not so great in amount.

At Dutch Harbor pressure was generally below normal until the 9th, when high pressure set in and continued until the 20th, the daily excess during this period amounting to about 0.35 inch. Following this the pressure fell so as to result in an average daily deficiency of about 0.60 inch for the last eight days of the month. This was in connection with the development of a depression of great extent, covering the whole of the central part of the ocean during much of the last decade.

The general character of the weather of the north Pacific during February was stormy, more especially along the northern steamer routes, resembling in this respect the weather of the preceding December. So far as noted there was an abatement of the strong northeast trades, which were a feature of the weather of January.

During the first decade the gales reported appear to have resulted from a series of comparatively small depressions, as they were reported from different parts of the ocean instead of being grouped, as is frequently the case. During the second and third decades the gales were quite noticeably grouped, appearing to have resulted principally from two depressions, one of rather small extent which moved eastward over the Gulf of Alaska from the 11th to 13th, the other a more important depression, or closely related series of depressions, which advanced from the western part of the ocean and culminated in the large cyclone of the last decade, already referred to.

Of the experiences of the vessels involved in the first of these disturbances that of the Japanese S. S. *Tokushima Maru,* Capt. S. Shibutami, Yokohama for Vancouver, is typical. This vessel was in latitude 51° 12′ N., longitude 160° 25′ W., on the 13th and on that day had a whole gale accompanied by a high sea. The wind shifted from SSE. to NNW. by way of S. The *Tokushima Maru* had previously experienced heavy weather on the 2d, in longitude 144° E., and on the 6th and 7th, in longitude 160–164° E.

Commencing about the 12th stormy weather set in over that part of the ocean to the eastward of Japan and the Kuriles and during the following week gales were reported very generally by vessels in those waters. During the succeeding week there was a noticeable eastward movement of the gale area to about mid-ocean.

The American S. S. *Salina,* Capt. Wilhelm Sorenson, Manila (Feb. 4) for San Francisco, was one of the vessels involved. Mr. F. P. Marshall, second officer and observer, has furnished the following report of the gale:

Gale began on the 12th; lowest barometer, 29.32 inches at 2 a. m. of the 13th, in latitude 35° 48′ N., longitude 155° 44′ E.; end of gale on the 17th; highest

force, 10, from SE.; shifts of wind, SE. to S. There was a lull in the gale from midnight of the 14th to noon of the 15th.

The U. S. A. T. *Dix*, Capt. A. N. Rasmussen, Miike (Feb. 9) for San Francisco, was another vessel involved. The report from the *Dix* shows that very rough to mountainous seas were encountered throughout most of the voyage, with a strong WNW. and NW. swell which prevailed even while the wind and sea were from the south.

The American S. S. *Edmore*, Capt. T. H. Cann, Yokohama (Feb. 13) for Seattle, also had heavy weather on the voyage. The *Edmore*, some distance to the westward of the *Dix*, had a very persistent NE. swell.

One of the vessels on the westward passage about this time was British S. S. *Empress of Asia*, Capt. A. T. Hailey, Victoria (Feb. 11) for Yokohama. This vessel met the principal depression of the series referred to on the 18th, when in about longitude 165° E. Mr. E. Turney, fourth officer and observer, has furnished a special report which shows that during the afternoon of the 18th and morning of the 19th the barometer fell from 29.60 inches to 28.50 inches. About noon of the 19th the barometer began to rise rapidly and the wind, which was then blowing a moderate gale from the north, went to NNW. and increased to a whole gale, which continued to midnight. The rise of the barometer from noon of the 19th to noon of the 20th amounted to 1.35 inches.

One of the most interesting reports for the month is that from the well-known American yacht *Carnegie*, returning to home waters after an extended cruise in the Southern Hemisphere. The *Carnegie*, under the command of Capt. J. P. Ault, sailed from Fanning Island for San Francisco on January 15, arriving February 19. Until the end of January the weather was good, with mostly light to fresh easterly breezes and smooth to moderate seas. From February 1 to 15, however, the weather was generally stormy, with rough to heavy seas. The highest force of the wind was 9, on the 12th-13th. Mr. Russell Pemberton, meteorological observer, invites special attention to the fact that from midnight of the 1st to 2 a. m. of the 11th, while on a course from latitude 38° 31′ N., longitude 165° 07′ W. to latitude 38° 30′ N., longitude 136° 34′ W., the wind was continuously between the points SW. and SE., force 4 to 8. The weather was overcast, foggy, and rainy during almost the entire period.

NOTES ON WEATHER IN OTHER PARTS OF THE WORLD.

Newfoundland.—St. Johns, February 8.—Newfoundland to-night huddled under its heaviest snow blanket in 30 years with a blizzard of three days still raging unabated. Rail, water, and highway traffic has been suspended throughout the colony and pedestrians here to-day were compelled to use snowshoes to venture into the streets.—*Associated Press* (?) *February 8, 1921.*

Jamaica.—Rain began to fall in Jamaica during the first week of February, after months of drought,[2] during which some of the banana and cane growing districts suffered considerably.[1]

Europe.—The pressure distribution over west and northwest Europe during the month was largely dominated by a series of important anticyclones. In consequence, strong winds and gales were rare, and the rainfall was small except in the Mediterranean area. Temperature was mostly high for the time of year in western Europe and Iceland, but severe frost prevailed at times over Sweden. Depressions followed paths well to the northward or southward of the British Isles.[1]

British Isles.—The most noteworthy feature of the month was pronounced deficiency of rainfall such as had not been observed since the very dry Februaries of 1895 and 1891. * * * At Seawaithe the rainfall was the smallest noted in February since observations began in 1845, January of this year having been the wettest since 1873. The general rainfall expressed as a percentage of the average was: England and Wales, 15; Scotland, 39; Ireland, 51.[1]

Australia.—Partial but useful rains fell in Queensland and New South Wales during the early and middle parts of the month, but in Western Australia the fall was too light to be of benefit. Near the end of the month heavy rainstorms were occurring in South and Central Australia, and also over a considerable portion of New South Wales.[1]

New Zealand.—Wellington, Feb. 25.—A hurricane southeast of the Lau (Fiji) Group on February 12, caused a tidal wave four feet high, which swept over the islands. The cocoanut trees are not seriously damaged. Two cutters were wrecked but no loss of life is reported.—*Samoa Times*, Mar. 5, 1921.

[1] The Meteorological Magazine, March, 1921, pp. 50 and 56.

[2] Cf. Pickering, W. H.: Relation of prolonged tropical droughts to sunspots, Mo. WEATHER REV., October, 1920, *48*, 589-592.